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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/827,317	04/20/2004	Hidekazu Moriyama	119294	2578

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EXAMINER
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LIN, JAMES

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 10/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/827,317

Applicant(s)

MORIYAMA, HIDEKAZU

Examiner

Jimmy Lin

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 25 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) 6 and 7 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION*****Double Patenting***

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1, 4, and 5 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 6, 11, and 12 of copending Application No. 10/827,426 in view of Kiguchi et al. (US 6599582 B2). Claim 6 of the application no. ‘426 discloses all of the limitations of claim 1 of the current application except for the limitation of forming banks and disposing the droplets into the grooves between the banks with the liquid droplet ejection head. Kiguchi et al. discloses that it is known in the art to form banks and dispose the liquid within the grooves in order to form a film pattern on a substrate therefore it would have been obvious to one of ordinary skill during the time to form banks and dispose the liquid in the grooves to form a pattern. Claims 11 and 12 of ‘426 disclose the limitations of claims 4 and 5 of the current application.

This is a provisional obviousness-type double patenting rejection.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kiguchi et al. (US 6599582 B2) in view of Shibata et al. (US 5347713), Edgett et al. (US 5683520) and Watanabe et al. (US 4966480).

Kiguchi et al. discloses a process for forming patterns on a substrate using an inkjet system, which allows a fluid to be ejected onto a substrate (abstract). The method include filling the liquid droplet ejection head and a conduit to feed the functional solution to the liquid droplet ejection head; forming banks corresponding to the film pattern on the substrate and disposing the liquid droplets into grooves between the banks with the liquid droplet ejection head.

Kiguchi et al. does not disclose filling the passage with purified water; or filling the passage with a solvent dissolving both a solvent contained in the solution and the purified water; or filling the passage with the solvent contained in the functional solution as required by **claim 1**.

Shibata et al. discloses a process for cleaning the ink passage of an ink jet head by introducing a liquid into the ink passage (abstract) in order to remove any deposits in the ink passage which can clog the discharge opening during the use of the ink jet head and can cause unstable or poor ink discharge (column 2, lines 24-34). Shibata et al. discloses that the liquid can be an organic solvent such as acetone, isopropyl alcohol or the like, alkali solution, detergent solution or pure water (column 2, lines 6-12).

Edgett et al. discloses a process for cleaning material that are used to store and deliver ink to an ink jet head to reduce nozzle blocking problems and reduction of surface tension in the ink

Art Unit: 1762

(abstract). The material should be washed with softened (purified) water and isopropanol in order to ensure reduction of antistats and clogging problems (abstract).

Watanabe et al. discloses a process for washing the ink passage within a writing instrument (abstract) in order to remove dried and solidified ink (column 3, lines 24-30). Watanabe et al. further discloses that the liquid used depends on the instrument parts and the ink that is used. The liquid must be able to dissolve the ink. Suitable solvents include isopropanol (column 4, lines 19-68 – column 5, lines 1-2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of Kiguchi et al. to include the steps of cleaning the ink passage with a liquid that is able to dissolve the ink as taught by Watanabe et al. and where the solvents can be purified water and isopropanol as taught by Shibata et al. and Edgett et al. One would have been motivated to do so because Kiguchi et al. teaches a process for forming a pattern using an ink jet head with a functional liquid; Shibata et al. teaches the importance of cleaning the ink passage of an ink jet head in order to remove deposits which can cause clogging and poor ink discharge and Shibata et al teaches that the cleaning solution can be an organic solvent such as isopropyl alcohol and pure water; Watanabe et al. teaches the importance of cleaning an ink passage with a solvent that can dissolve the ink in order to remove dried and solidified ink and Edgett et al. further teaches the importance of cleaning materials that are used to deliver inks in ink jet printing devices with purified water and isopropyl alcohol in order to prevent clogging therefore one would have a reasonable expectation of dispensing liquid droplets onto a substrate without poor ink discharge.

After cleaning the ink jet head, it is filled with the functional liquid in order to form a pattern by disposing liquid droplets of a functional solution on a substrate therefore the passage is filled with the solvent contained in the functional solution as required by **claim 1**. In regards to **claim 3**, Watanabe et al. teaches that a solvent that is the same as the solvent in the ink can be used therefore one would fill the passage with a solvent found in the functional liquid then fill the passage with the functional liquid in order to form a pattern.

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kiguchi et al. (US 6599582 B2) in view of Shibata et al. (US 5347713), Edgett et al. (US 5683520) and Watanabe et al. (US 4966480) as applied to claim 1 above, and in further view of Nakamura (JP 11-001046A), Fujioka et al. (JP 2000094707A), and Yano et al. (US 6342105 B1).

The teachings of Kiguchi et al. in view of Shibata et al., Edgett et al. and Watanabe et al. as applied to claim 1 are as stated above.

Kiguchi et al. in view of Shibata et al, Edgett et al. and Watanabe et al. does not teach filling a liquid ejection head with a predetermined storage solution as required by **claim 2**.

Nakamura discloses the use of a storage solution for preserving the inside of a ink jet head when being stored in order to make the initial introduction of ink perform smoothly without generating air bubbles in the ink [0003].

Fujioka discloses filling the ink jet head with an introductory liquid such as a water-soluble organic solvent in order to fill the passage with ink without leaving air bubbles in an ink-jet head which can result in non satisfactory performance [0004-0005].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to store the ink jet head of Kiguchi et al. in view of Shibata et al., Edgett et al. and Watanabe et al. with a water-soluble organic solvent as taught by Nakamura and Fujioka. One would have been motivated to do so because both Nakamura and Fujioka teach that filling the head with the liquid will reduce the generation of bubbles in the ink as well as improve the performance of the ink jet head therefore one would have a reasonable expectation of success in forming the film pattern.

Yano et al. discloses a method for restoring an ink jet head after being stored. Yano et al. discloses a process where an ink jet is stored for a long-term and has a storage liquid mixed with

Art Unit: 1762

the ink during storage however this can result in clogging of the ink jet head (column 1, lines 46-65).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of Kiguchi et al. in view of Shibata et al., Edgett et al., and Watanabe et al. to clean the ink passage after storing the ink jet head with a storage solution. One would have been motivated to do so because Yano et al. discloses that storing the ink jet head with a storage solution can result in clogging of the ink jet head and Kiguchi et al. in view of Shibata et al., Edgett et al., and Watanabe et al. disclose a process to clean an ink jet head to rid of dried ink (clogging) therefore one would have a reasonable expectation of success in disposing a liquid onto a substrate after being stored for a long period of time.

6. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kiguchi et al. in view of Shibata et al., Edgett et al., and Watanabe et al. as applied to claim 1 above, and in further view of Hashimoto et al (US 2003/0030689 A1).

The teachings of Kiguchi et al. in view of Edgett et al., and Watanabe et al. as applied to claim are as stated above.

Kiguchi et al. in view of Edgett et al., and Watanabe et al. does not teach that the functional solution exhibits electrical conductivity by thermal or optical treatments as required by **claim 4**.

Hashimoto et al. discloses a process of forming a film pattern by disposing liquid droplets of a functional solution on a substrate where the pattern is good for exhibiting a function such as electric conduction (abstract). Hashimoto et al. also discloses that the ejected liquid is transformed into a functional film by heat treatment [0017].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of Kiguchi et al. in view of Edgett et al., and Watanabe et al. to include the step of heating the liquid as taught by Hashimoto et al. One would

Art Unit: 1762

have been motivated to do so because both disclose processes for forming a film pattern on semiconductor devices and Hashimoto et al. discloses the additional step of heating in order to allow the film to exhibit electrical conductivity therefore one would have a reasonable expectation of success in forming the pattern.

The process is performed to form semiconductor devices as required by **claim 5**.

### *Response to Arguments*

7. Applicant's arguments filed 7/25/06 have been fully considered but they are not persuasive.

Claims 1 and 3 as rejected over Kiguchi, Shibata, Edgett, and Watanabe:

The Applicant argues that Shibata only teaches the use of isopropanol or pure water including carbon dioxide bubbles as the cleaning fluid, but not a combination thereof. However, Shibata teaches that both fluids are suitable for cleaning the ink jet head. To use both fluids in the process of cleaning the ink jet head would have been an obvious modification.

The Applicant argues that each of Shibata, Edgett, and Watanabe only disclose use of a single cleaning fluid. However, the Applicant should note that the claim is not limited to filling the passage with purified water and a solvent at different times. Watanabe teaches that the cleaning fluid can be a mixture of isopropanol and aqueous solutions (col. 4, lines 25-38). Edgett teaches that the cleaning fluid can be a mixture of softened water and isopropanol (abstract). Shibata teaches that the cleaning fluid can be isopropanol and pure water (col. 2, lines 1-12).

The Applicant argues that none of the references discloses the cleaning of a passage including an inkjet head and conduit. However, Watanabe teaches the cleaning of a writing instrument, wherein the writing instrument includes a conduit 26 and an inkjet head 21 (Fig. 2).

The Applicant argues that Shibata and Edgett are directed to the removal of contaminants left by the manufacturing process and that they are not directed to removing dried or solidified ink as claimed. However, the Examiner never argued that Shibata and Edgett are directed to removing dried or solidified ink. Shibata and Edgett both teach methods of cleaning parts of an ink jet head in order to remove residue from the manufacturing process. Both references teach



purified water and isopropanol are suitable cleaning fluids. Watanabe teaches that ink residue can be cleaned using isopropanol, which can be combined with an aqueous solution. Therefore, to use similar solvents for the same purpose (i.e., cleaning parts of an ink jet head to prevent clogging) would have been an obvious modification.

Claim 2 as rejected over Kiguchi, Shibata, Edgett, Watanabe, Nakamura, Fujioka, and Yano:

The Applicant argues that none of the references discloses the use of a solvent to dissolve a storage solution and that none of the references discloses the use of a solvent to dissolve both the solvent used to dissolve the storage solution and the solvent in the functional solution. However, the combination of Nakamura and Fujioka teach that a water-soluble organic solvent can be used as the storage solution. At least Edgett teaches that isopropanol is soluble in water. Therefore, the water-soluble organic solvent of Nakamura and Fujioka must necessarily also be soluble in isopropanol.

The Applicant argues that none of the references discloses the use of a solvent to dissolve both the solvent used to dissolve the storage solution and the solvent in the functional solution. Isopropanol dissolves the water-soluble organic storage solution as discussed immediately above. Watanabe teaches that isopropanol can be used as the particular solvent used in the ink (i.e., the functional solution). Isopropanol must necessarily be capable of dissolving in itself. There, the combination of all the references teaches that isopropanol can dissolve the water-soluble organic storage solution and the solvent (i.e., isopropanol) in the functional solution.

The Applicant argues that none of the references discloses the filling or cleaning of a passage including both an ink jet head and a conduit. However, Watanabe teaches a writing instrument comprising a conduit and an ink jet head as discussed above.

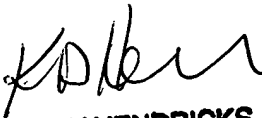
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy Lin whose telephone number is 571-272-8902. The examiner can normally be reached on Monday thru Friday 8AM - 5:30PM

Art Unit: 1762

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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**KEITH HENDRICKS**  
**PRIMARY EXAMINER**